

# The Relationship Between Base Closures/Realignments and Non-DoD Federal Costs

September 1994

# Executive Summary

This summary and the attached report respond to Congressional direction that the Department of Defense (DoD) consider whether the costs of base realignment and closure (BRAC) actions to other Federal departments and agencies should be included in the final selection criteria for the 1995 BRAC process.

Section 2925 of the National Defense Authorization Act for Fiscal Year 1994 states that:

- It is the sense of Congress that the Secretary of Defense consider, in developing in accordance with section 2903(b)(2)(B) of the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510; 10 U.S.C. 2687 note) amended criteria, whether such criteria should include the direct costs of such closures and realignments to other Federal departments and agencies.
- The Secretary shall submit to the Committees on Armed Services of the Senate and House of Representatives a report on any amended criteria developed by the Secretary under Section 2903(b)(2)(B) of the Defense Base Closure and Realignment Act of 1990 after the date of the enactment of this Act. Such a report shall include a discussion of the amended criteria and include a justification for any decision not to propose a criterion regarding the direct costs of base closures and realignments to other Federal agencies and departments.
- The Secretary shall submit the report upon publication of the amended criteria in accordance with section 2903(b)(2)(B) of the Defense Base Closure and Realignment Act of 1990.

In response to Section 2925 of the National Defense Authorization Act for Fiscal Year 1994, the DoD conducted a thorough review of its policies regarding the treatment of the costs of BRAC actions to other agencies. The review was conducted by the Joint Cross-Service Group on Economic Impact (Joint Group, hereafter), which was established by the Deputy Secretary of Defense as part of the BRAC process for 1995. The Joint Group, which is chaired by the Deputy Assistant Secretary of Defense for Economic Reinvestment and Base Realignment and Closure, includes representatives from the Military Departments and several organizations within the Office of the Secretary of Defense. The Joint Group conducted its review of non-DoD BRAC costs from the ground up.

Based on the Joint Group's review, the Department's position on the treatment of the costs of BRAC (actions to other Federal department and agencies is as follows:

- The Department does not propose a criterion regarding the direct costs of base closures and realignments to other Federal agencies and departments.

- ◆ When calculating the costs and savings of BRAC recommendations, however, DoD will include costs to other Federal agencies when they are measurable, identifiable costs that DoD would incur as a direct result of BRAC-related actions
- ◆ When calculating the costs and savings of BRAC recommendations, DoD will not consider the costs of BRAC actions on other Federal departments and agencies when such costs (1) would not be borne by DoD, (2) would result only indirectly from BRAC actions, or (3) result from base reuse activities, which cannot be known during BRAC decision-making processes.

There are three key reasons why DoD does not propose a new criterion and will not consider some types of non-DoD costs:

- ◆ First, the Joint Group found that it would be impossible to obtain accurate estimates for costs to other Federal programs within the framework of the BRAC process. In general, reasonably accurate estimates can be obtained only at prohibitive cost and within a time frame that is far too long for the time-sensitive process of developing base closure and realignment recommendations. Less reliable estimates could be obtained more quickly and at lower cost, but typically would apply national averages or "best-guess" assumptions to local conditions. The key problem with such estimates is that their margin of error is so large that they probably would be misleading indicators of local economic conditions, and therefore would be inappropriate as a basis for BRAC-95 decision-making.
- ◆ Second, the Department has no basis for forecasting other Federal costs associated with base reuse activities. When the Department is developing BRAC recommendations, DoD cannot know how bases might ultimately be reused. Base reuse decisions generally are made long after the BRAC process is completed.
- Third, the Joint Group found that even where BRAC actions could result in cost increases to other Federal departments and agencies, these costs would amount to a small fraction of BRAC savings (less than 2 percent), even under worst-case assumptions. The increased costs to other departments and agencies would not be large enough to influence individual base closure decisions or to significantly change calculations of BRAC costs and savings.

The remainder of this summary elaborates on these three points. The attached report provides the analytical foundation for the Department's position.

## FORECASTING COSTS TO OTHER AGENCIES

The Joint Group considered how the Department might forecast the cost of BRAC actions to other Federal agencies, on a recommendation-by-recommendation basis, during the BRAC-95 process. The Joint Group found that relying on such forecasts would be ill-advised.

The Joint Group found that a trade-off exists between estimating costs to other Federal departments and agencies accurately and the cost and time of obtaining the estimates. In general, reasonable estimates can be obtained only at high cost, such as through surveys of DoD personnel and highly-detailed, sophisticated forecasts of local economic conditions, and even then would be subject to a large degree of uncertainty. Because the BRAC process must treat each installation equally, it would be unfair to rely on such estimates for some base closure recommendations, but not for others. Estimates would therefore have to be obtained for each economic area that contains one of the 400-plus installations in the United States. This would be a daunting, prohibitively expensive, and time consuming undertaking.

Less reliable estimates could be obtained at lower cost. However, such estimates typically would apply national averages or "best-guess" assumptions to local conditions. The key problem with these estimates is that while they can be produced at lower cost, their margin of error is so large that they probably would be misleading indicators of local conditions, and therefore inappropriate as a basis for BRAC decision-making.

Pages A-2 through A-5 and Annex 1 to Appendix A of the attached report provide a thorough discussion of these issues.

## POTENTIAL JOB CHANGE AS A PERCENT OF EMPLOYMENT IS AN ACCEPTABLE PROXY

Although costs to other Federal departments and agencies can be difficult if not impossible to estimate directly, the Joint Group found that the economic impact measures used in the BRAC process can serve as a generally reliable indicator of such costs. (See "Cost of Federal Programs and the Base Realignment and Closure Review Process" on page 11 of the accompanying report.)

Specifically, the Joint Group found that potential job change as a percent of employment in the surrounding economic area, which has been a primary measure of economic impact used in the BRAC decision-making process, is an acceptable indicator of changes in costs to other Federal departments and agencies. The Joint Group determined that relative differences in the potential job change as a percent of economic area employment should, in general, reflect relative differences in the probable costs to other Federal departments and agencies. That is, a recommended base closure where the total potential job change as a percent of economic area employment is higher is likely to have a larger effect on the costs to other Federal departments and agencies than a closure alternative where this percentage is lower. When considering the economic impact on communities, therefore, the Department implicitly considers some costs, albeit unquantified, to other Federal, state and local government agencies.

It is important to keep in mind, however, that regardless of whether costs to other Federal departments and agencies are relatively high or low, it is

impractical to analyze the absolute size of these costs. Further, as discussed below, these costs would constitute a small fraction of BRAC savings, even under worst case assumptions, and therefore would have little influence on the ultimate closure recommendations.

## DoD IS UNABLE TO CONSIDER OTHER AGENCY COSTS ASSOCIATED WITH BASE REUSE

Other Federal departments and agencies are provided the opportunity to receive real and personal property at closing military bases as a routine part of the property disposal process. When they do request a former base property, other Federal departments and agencies would be expected to incur costs for operating, maintaining, or modifying the property. In addition, some base reuse activities could require new efforts by other Federal departments and agencies. For example, a new regional airport opened at a closed Air Force base could increase the workload of the Federal Aviation Administration. On the other hand, surplus military property is often transferred at little or no cost to other Federal agencies, thus providing a capital subsidy that could offset higher operating costs.

DoD is unable to consider these types of costs or savings in its calculations of BRAC costs and savings because it cannot know how bases might ultimately be reused when it is developing BRAC recommendations. The process for determining how base property is to be reused takes place long after the BRAC decision-making process has been completed. When the Department is developing BRAC recommendations, it does not have any way of knowing or forecasting how bases would be reused if they were to be closed. Therefore, the Department is not able to predict whether particular agencies might eventually take over particular installations, and, if they do, what the associated costs would be. Similarly, the Department cannot predict the new costs that reuse activities might impose on other Federal agencies. In any case, if other governmental activities choose to reuse surplus military installations to modernize or expand their programs, these costs do not appear to be relevant to DoD closure or realignment deliberations.

## COSTS TO OTHER FEDERAL DEPARTMENTS AND AGENCIES ARE SMALL COMPARED TO BRAC SAVINGS

Despite the barriers to estimating costs to other Federal agencies on a recommendation-by-recommendation basis, the Joint Group nevertheless analyzed how large these costs are likely to be. The Joint Group found that the costs of BRAC actions to other Federal Departments and agencies are small compared with BRAC savings.

This finding is based on a statistical analysis of six counties that had bases closed prior to December 1993 as a result of BRAC-88 and BRAC-91. The six counties were selected from a larger set of all BRAC-88 and BRAC-91 closures on the basis of their geographic diversity, labor force size, metropolitan or non-metropolitan character, and the magnitude of DoD employment reductions relative to the size of the total civilian employment base. A description of the selection process and the counties can be found on pages 3 through 6 of the attached report.

The statistical analysis focused on how changes in employment and unemployment in counties with base closures affect Medicaid, Food Stamps, and Aid to Families with Dependent Children (AFDC). These three programs were selected because they account for more than one-half of all outlays for cash and non-cash benefits to low-income individuals, and they are the most expensive non-DoD programs that could be influenced by BRAC actions.

The statistical analysis is described on pages 7 and 8 and in Appendix B of the report. A key conclusion of the analysis is that, on average, each time the level of county civilian employment is reduced by 1,000, the number of Food Stamp and AFDC cases increases by 46.

Three key points help put this finding into context:

- ◆ First, as explained on pages 8 through 11, “job losses” associated with base closures do not necessarily mean reductions in the level of county civilian employment. Indeed, civilian employment actually increased in five of the six counties, despite local base closures.
- ◆ Second, the results of the statistical analysis demonstrate that other economic factors, particularly in larger communities and at the state level, are more important than employment changes in explaining rising need-based Federal program costs. (See page 11 and Appendix B.)
- ◆ Third, the employment-linked incremental cost of need-based programs is small compared with savings associated with base closures. The statistical analysis suggests that under worst-case assumptions – i.e., that all BRAC-93 job losses would result in civilian employee reductions on a one-for-one basis (an assumption that clearly runs counter to the finding that civilian employment actually increased in five of the six counties studied) – the increased annual cost of these expensive programs would represent less than 2 percent of recurring BRAC-93 annual savings. (See page 12)

## GENERAL ACCOUNTING OFFICE POSITION

To facilitate its review, the Joint Group requested that the General Accounting Office (GAO) clarify its position on the inclusion of government-wide costs

in BRAC analysis. A letter from GAO clarifying their position follows the attached report as Appendix C.

## CONCLUSION

The Department takes seriously Congressional concern about the costs that the base closure process could impose on other Federal departments and agencies. The approach that we will take in BRAC-95 will consider many BRAC-related costs to other Federal agencies. There are, however, costs that could, in theory, arise from BRAC actions that the Department cannot estimate with an acceptable level of accuracy. Fortunately, we are confident that the costs we cannot estimate directly are only a small percentage of BRAC savings and that most of these are considered implicitly in BRAC measures of the economic impact on communities.

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# Military Base Closures and Their Relationships to Non-DoD Federal Program Costs

## OVERVIEW

The objectives of this analysis are (1) to examine the relationship(s) between base closure and realignment actions and any potential cost impacts on non-DoD Federal programs, and (2) to determine the feasibility of estimating the impacts if such relationships do exist. To fulfill these objectives we

- ◆ identified selected Federal government "need-based" benefits programs potentially affected by base closures,
- ◆ identified explanatory factors that could relate changes associated with base closures with potential cost impacts on other Federal programs,
- ◆ compared the reliability and cost of alternative methodologies for estimating those cost impacts, and
- ◆ demonstrated the statistical relationship between an explanatory factor and the cost of selected Federal programs at the national level and in communities experiencing recent base closures.

## IDENTIFICATION OF NON-DO D FEDERAL BENEFITS PROGRAMS THAT COULD BE IMPACTED BY BASE CLOSURES

Fifty-one Federal organizations administer **1,308** assistance programs. Of particular interest in this analysis are programs that account for the majority of Federal payments in the form of cash and noncash benefits to persons with limited income.<sup>1</sup>

One anticipated effect of base closures is the reduction, at least in the short run, of the earnings of some former base employees. Those individuals could become recipients of one or more need-based government assistance programs if their incomes decline to a level where they become eligible for assistance.

<sup>1</sup>For a discussion of certain Federal programs potentially impacted by base closure, see Appendix A. Appendix A also describes various approaches for estimating the relationship between Federal program costs and base closure – and the costs of using each approach.

At the national level, statistics regarding Federal fund outlays for need-based assistance programs (other than social security and other pension payments) are aggregated by the Bureau of the Census at the county level.<sup>2</sup> Three programs account for more than one-half of all outlays for cash and noncash benefits to low-income individuals: Medicaid, Food Stamps, and Aid to Families with Dependent Children (AFDC). Changes in the demand for these three programs at the county level form the basis for our case study analysis of impacted communities.

## IDENTIFICATION OF AN EXPLANATORY FACTOR ACCOUNTING FOR INCREASED FEDERAL BENEFITS PROGRAM COSTS

A relationship can be hypothesized from an inspection of the budgets of need-based programs and employment conditions. In periods of employment growth, outlays for those programs stabilize. When unemployment is rising, the cost of need-based programs climbs rapidly. This relationship is expected, because low income is a primary criterion for need-based program eligibility. A substantial number of all persons receiving transfer payments (and all receiving unemployment compensation) are unemployed. As these people find jobs, expenditures for programs such as Food Stamps can be expected to decrease.

Based on these preliminary observations, employment and unemployment status can be expected to be a statistically measurable factor in explaining changes in the demand for need-based programs. Because monthly labor force data at the county level are maintained across the Nation, employment data are available in all communities with military facilities.

## ALTERNATIVE APPROACHES FOR VALIDATING THE RELATIONSHIP BETWEEN EMPLOYMENT AND THE DEMAND FOR FEDERAL BENEFITS PROGRAMS

Three quantitative approaches were considered to test the relationship between employment levels and the costs of selected need-based Federal programs at the national and local levels. The first possibility would involve population surveys in communities experiencing base closures to estimate the share of program recipients that became eligible as a result of base closures. The second approach would involve data about the number of recipients of need-based programs from counties across the Nation and examine how the number of recipients varied with changes in the national economy. The third would focus on a small number of counties experiencing recent base closures.

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<sup>2</sup> *Consolidated Federal Funds Report*, Bureau of the Census, U.S. Department of Commerce.

Taking into account the availability of data and cost factors, we selected a combination of national-level analysis (i.e., the second approach) and analysis in communities experiencing recent base closures (i.e., the third approach) as the most reliable, cost-effective, and timely methodology for assessing the relationship between employment levels and the costs of selected need-based Federal programs. (A more detailed discussion of the alternative approaches reviewed can be found in Appendix A.)

## STATISTICAL RESULTS OF NATIONAL DEMAND ANALYSIS

A statistical analysis of Federal government payments to individuals (other than retirement and disability payments) for the 1988 to 1992 period (for all counties in the United States) shows a very strong, statistically significant relationship between outlays for Federal need-based benefits programs and changes in employment. (See Appendix B for a technical description of the methodology, approach, and results of the analysis.) As one would expect, when employment is reduced Federal outlays for transfer payments rise.

Employment variation alone, however, does not explain all the variance in outlays for Federal assistance programs. This is true because numerous programs to assist individuals are not directly linked to changes in employment. These include programs for housing assistance, student loans and grants, school lunch programs, and Medicaid funds. Many of these programs require recipients to be at the poverty level, and a change in employment status, which for most workers will be temporary, does not imply that all impacted individuals will fall to the poverty level.

## RESULT OF CASE STUDIES OF BASE CLOSURE COMMUNITIES

### Communities Selected for Review

The national demand analysis, which included all counties, shows that there is a statistically significant relationship between a decline in employment and higher outlays for Federal payments to individuals. The objective of the case studies is to determine if this relationship, or a stronger one, can be found in counties experiencing recent base closures.

A group of six counties in five states experiencing base closures mandated by base realignment and closure (BRAC) decisions in 1988 and 1991 and completed by December 1993 were selected from a larger set of all BRAC-88 and BRAC-91 closures on the basis of their geographic diversity, labor force size, metropolitan or nonmetropolitan status, and the magnitude of DoD employment reductions relative to the size of the total civilian employment base. Characteristics of the selected county sites are shown in Tables 1A and 1B. The

analysis excludes BRAC-93 closures because no BRAC-93 installations were completely closed at the time this report was prepared.

**Table 1A.**  
*Characteristics of Selected Base Closure Communities*

installation	County	State	Year of BRAC <sup>a</sup> announcement	County civilian DoD employment (October 1988)
Fort Ord/Presidio	Monterey	CA	1991	154,000
Sacramento Army Depot	Sacramento	CA	1991	475,600
Chanute AFB	Champaign	IL	1988	88,429
Wurtsmith AFB	Iosco	MI	1991	10,300
Pease AFB	Rockingham	NH	1988	122,800
Ira Eaker AFB	Mississippi	AR	1991	19,375

<sup>a</sup> BRAC = Base Realignment and Closure

**Table 1B.**  
*Characteristics of Selected Base Closure Communities*

Installation	Military personnel change (1989 – 1993)	Civilian DoD-personnel change (1989– 1993)	DoD personnel changes as a percentage of county civilian employment (1988)	Percentage change in county civilian employment (1988– 1993) <sup>a</sup>
Fort Ord/Presidio	(12,965)	(991)	(9.1)%	0.8%
Sacramento Army Depot	(232)	(2,188)	(0.5)	11.1
Chanute AFB	(4,304)	(897)	(5.9)	3.9
Wurtsmith AFB	(3,207)	(451)	(36.2)	(11.2)
Pease AFB	(3,400)	(177)	(2.9)	5.4
Ira Eaker AFB	(2,965)	(330)	(17)	20.4
Average			(9.4)%	5.1%
Total	(27,073)	(5,034)		

<sup>a</sup>The change in civilian employment from 1988 to November 1993 in all U.S. counties was 4.9 percent.

Quarterly or monthly data in the selected communities were collected for three major need-based programs – Medicaid, Food Stamps, and AFDC. Data about employment and unemployment for corresponding time periods were also collected. Consistent program and labor force data were tabulated for the time period of October 1988 to December 1993.

## Employment Changes in Selected Communities

As shown in Table 1A, BRAC-91 affected four of the six counties. In the other two counties, facilities were closed in response to BRAC-88. Civilian employment levels prior to base closure in the selected counties ranged from 10,300 (Iosco County, Mich.) to 475,000 (Sacramento County, Calif.). DoD civilian and military personnel reductions as a percentage of county civilian employment varied from 0.5 percent in Sacramento County, to 36.2 percent in Iosco County.

Direct DoD job losses in the six counties totaled more than 30,000. Between 1988 and 1993, five of the six impacted counties gained civilian jobs despite the closure action. The exception to this pattern was Iosco County, which showed a decline in civilian jobs. This finding suggests that economic factors other than the base closure action had a more dominant influence on the economy of the region in which the installation was located.

## Changes in Demand for Selected Benefit Programs at the Local and State Levels

Changes in the number of Medicaid, Food Stamps, and AFDC cases (i.e., recipients or beneficiaries) between October 1988 and December 1993 in the six communities are shown in Table 2A. In each of the *six* areas, changes in local cases were compared to the state average as a means for taking into account some of the variation in demand for these programs attributable to regional economic conditions. As shown in Table 2A, the rate of increase in the number of AFDC cases during the 1988 to 1993 period was *greater* at the state level than in counties experiencing base closures. The **only** exception to this pattern was Champaign County. The rise in demand for food stamps at the state level also exceeded the rise in the base closure-impacted counties in three of the five counties where comparable data were examined, indicating that other economic factors had a larger negative impact on the state as a whole than the closure of the base had on the county in which it is located.

**Table 2A.**  
***Percentage Change in the Number of AFDC, Food Stamps,***  
***and Medicaid Cases***  
***(1988 - 1993)***

County/State	AFDC (percentage)	Food Stamps (percentage)	Medicaid (percentage)
Iosco County	2.8	20.8	NA
Michigan	7.6 <sup>a</sup>	16.5	NA
Mississippi County	(4.7)	NA	20.4
Arkansas	10.7 <sup>b</sup>	NA	47.7 <sup>c</sup>
Monterey County	51.1	43.1	NA
California	51.2 <sup>a</sup>	100.4 <sup>b</sup>	NA
Sacramento County	43.1	81.5	NA
California	51.2 <sup>a</sup>	100.4 <sup>b</sup>	NA
Champaign County	23.1	31.6	54.6
Illinois	7.3	13.6	30.4
Rockingham	218.7	133.9	NA
New Hampshire	266.6 <sup>b</sup>	156.9 <sup>a</sup>	NA

Notes: At the county level, data was tabulated by local personnel. State data was obtained from various state documents. NA = not applicable

<sup>a</sup>Change at the state level exceeds county rate of change.

As noted earlier, between 1988 and 1993, civilian employment increased in five of the six counties impacted by base closures. In three of those five counties that indicate a *rise* in civilian jobs, the growth rates *exceed* the state averages.

From 1988 to 1993, local unemployment rates increased at a pace that exceeded state-level increases in only three of the six counties. (See Table 2B.) In two counties, state-level increases in unemployment exceeded those for base closure counties. In Arkansas, unemployment rates fell in the county and state.

The five-year trend data suggest no definitive relationship between base closures and changes in the number of transfer program cases (i.e., Federal benefits program beneficiaries). To statistically examine whether a relationship exists in the selected counties experiencing recent base closures, we must apply statistical techniques that examine employment and assistance changes on a monthly or quarterly basis. We discuss the results of that analysis in the next section.

**Table 2B.**  
**Percentage Change in Unemployment Rates**  
 (1988 - 1993)

	Unemployment rate (percent)		Percentage change
	1988 <sup>b</sup>	1993 <sup>b</sup>	
Iosco County	8.4	11.1	32.1
Michigan	7.6	8.8	15.8
Mississippi County	13.4	11	(17.9)
Arkansas	7.7	6.2	(19.5)
Monterey County	8.4	12.3	46.2 <sup>a</sup>
California	5.3	9.2	73.6
Sacramento County	5.4	8.3	53.7 <sup>a</sup>
California	5.3	9.2	73.6
Champaign County	4.2	5.4	28.6
Illinois	6.8	7.4	8.8
Rockingham	2.7	6.4	137
New Hampshire	2.4	5.3	120.8

<sup>a</sup>Change at the state level exceeds county rate of change.

<sup>b</sup>Average annual rate.

## Results of the Statistical Analysis of the Monthly/Quarterly Data Exploring the Relationship Between Employment Changes and the Demand for Selected Federal Programs

Statistical analyses of five counties experiencing base closures shows that each time civilian employment levels in a county are reduced by 1,000, the number of food stamp and AFDC cases increases by **46** (i.e., **4.6** percent). (A detailed statistical analysis of this result is shown in Appendix B.) This relationship is an average, and considers observations for the combined cases in five counties (Mississippi County was excluded because of incomplete data.). The addition of the Medicaid program has little impact on the number of total cases because factors not related to employment are the dominant cause for rising Medicaid demand.

As one would expect, changes in unemployment have the opposite effect. Reducing unemployment by 1,000 leads to a decrease of **53** AFDC and food stamp program cases, a somewhat higher number than the reduction in employment.<sup>3</sup>

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<sup>3</sup> Appendix B shows the derivation of this relationship.

Employment changes, however, explain only part of the change in demand for the Federal program funds. Between 1988 and 1993, one observes an underlying rise in demand for those funds that is independent of employment changes. This is particularly evident in the Medicaid program. That is, even in the absence of changes in employment (or unemployment), the number of cases seeking Federal assistance rises.

In small, relatively isolated, semi-rural areas such as Iosco County, changes in demand for Federal need-based programs appear to be linked primarily to changes in employment. However, in larger urban areas, and particularly at the state level, factors independent of employment are the dominant cause of changes in demand for those Federal programs. At this level, the role of employment cannot be isolated from other causes.

These results imply that in small communities with limited employment opportunities and low job mobility, employment reductions attributable to base closure or other causes can lead to measurable, but numerically small, increases in participation in the Medicaid, Food Stamps, and AFDC programs. In larger more populated communities, however, the impact of changes in employment are less important than other regional economic factors.

## Base Closures and Employment Changes

Although there is a strong relationship between changes in employment and the demand for need-based Federal programs, base closures should not be expected to result in reductions in the level of civilian employment equal to the loss of all jobs at the installation. Detailed employment data from the *six* case study sites demonstrate that the impact in those counties has been less severe than base job loss estimates would indicate.

As noted previously, in five of the *six* case-study counties, civilian employment actually *rose* between 1988 and 1993, and in several areas, more rapidly than at the state level. Although the number of DoD personnel declined in each of the five counties as a result of base closures, in most instances other job growth more than offset these base-related losses.

The impact of DoD base closures on employment and unemployment can be expected to differ by the size of the community and the share of total county employment attributable to former base employment. However, even in areas where DoD civilian employees comprised a substantial percentage of all local employees prior to base closure, the results differ by location. For example, the closure of Ira Eaker AFB in Mississippi County, Ark., resulted in a loss of 3,265 military and civilian DoD jobs between 1988 and 1993. However, during the same time period, the number of civilian jobs expanded by **3,650**, or by nearly 20 percent. Iosco County, Mich., the site of Wurtsmith AFB, lost 3,658 military and civilian DoD jobs. This county had a reduction of 1,150 civilian employees during this same time period, a considerably lower number than the loss of DoD jobs.

Several factors discussed in subsequent sections of this report explain why reductions in local employment levels are typically *less severe* than the job losses directly associated with base closures.

## MILITARY DoD PERSONNEL PROFILE

Base closure causes many military personnel and their dependents to relocate to other military installations, usually in new counties (different from the base closure sites). This relocation has two immediate effects on the local labor force. First, both the labor force and employment levels decline by the same number as the reduction in military personnel at the site.<sup>4</sup> Second, most spouses of military personnel employed in the local economy leave, causing a further decline in the labor force.

The potential for higher civilian unemployment attributable to the loss of military personnel in a local economy is offset, to a large extent, by a parallel reduction in the size of the local labor force. Typically, about 60 percent of all military personnel are married and 60 percent of spouses hold full-time or part-time jobs, mostly in the services and retail trades.<sup>5</sup> Thus, for every military person leaving a community, 0.36 other people can be expected also to leave the local labor force. Studies have shown that spent earnings of military employee generates about 0.35 jobs in the civilian economy.<sup>6</sup> Thus, civilian job losses attributable to the loss of military personnel and the associated economic impact may be offset, to a large extent, by fewer workers in the local labor force.

Assuming that military spouses in the civilian labor force have the same unemployment rates as other civilians, the departure of military personnel has little impact on the *rate* of civilian employment and unemployment. In the short run, both local employment levels and the local labor force are reduced and the local economy shrinks, but employment *rates* are essentially unaffected.

In theory, one would expect to observe a reduction in civilian employment following base closure as a result of reduced purchases in the local economy by former base employees and by the base itself. This would happen if the local economy was totally dependent on the military installation. In reality, even in communities with a large DoD presence, some segments of the local economy are only marginally affected by base closures. For example, many communities with military installations have a substantial number of retired military households as area residents. Pension payments to those households continue regardless of base closure. Similarly, manufacturing industries are usually not dependent on local base purchases. As non-DoD economic activity expands, initial reductions

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<sup>4</sup>The decline is the same for the labor force and employment levels because none of the military personnel are unemployed. The labor force is defined as the number of persons employed and unemployed.

<sup>5</sup>Spouse employment levels in rural areas are usually below 60 percent due to limited job opportunities.

<sup>6</sup>The job multiplier varies by the size of the local economy. In rural areas, the multiplier may be lower, and in large metropolitan areas higher, than 0.35.

in base-related civilian employment are offset by gains in other sectors. However, retail and personal service businesses near the closed installation may be adversely affected by the loss of military personnel.

## CIVILIAN DoD PERSONNEL PROFILE

Unlike military personnel, many DoD civilians losing on-base jobs tend to remain in the community, at least in the short run. Nonetheless, one should not expect a one-to-one decrease in civilian employment levels, an increase in unemployment rates, or increases in the demand for need-based Federal programs as a result of DoD civilian job losses for several reasons:

- ◆ *Early retirement.* Some percentage of civilian DoD personnel may have the opportunity to opt for early retirement. As such, their incomes can be expected to remain above the poverty rate, even in the absence of other earnings. For example, 348 civilians at Fort Ord opted for early retirement between 1990 and 1993, representing about one-third of civilian jobs lost at the base due to its closure.<sup>7</sup>
- ◆ *Other income.* About one-half or more of all married personnel will have spouses employed in the community. In most cases, this employment may not be directly affected by base closures. Others may have additional sources of income, including savings, that would preclude their eligibility for transfer payments.
- ◆ *Relocation.* Some DoD employees can be expected to leave their localities because their function has been reassigned to another installation. These employees may be given the option to be assigned to the new location. Other DoD employees may relocate because they found Federal civil service positions elsewhere in the Nation. Finally, DoD employees could move to accept positions in the private sector in another location. Relocation is most likely for more senior, higher-grade persons with extensive skills or specialized experience in occupations for which there is a high demand. Another former DoD-employed group likely to relocate are young persons without children in local public schools or other deep ties to the community.
- ◆ *Other employment opportunities within the impacted community.* Depending upon local economic conditions, the size of the local economy, and the success of base reuse programs, former base workers are often likely to find new jobs in the community.

## Net Employment Impact of Base Closures

The net employment and unemployment resulting from base closures cannot be predicted with any precision for individual sites. The range of impact, as the case studies illustrate, can vary from negligible to moderate depending on

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<sup>7</sup> Source: Defense Manpower Data Center (DMDC).

numerous other economic factors outside DoD's control. However, even in the worst case scenario, the added demand for need-based programs can be expected to be modest on the basis of experience in the six communities studied.

The statistical analysis described in Appendix B shows that the percentage change in the number of Federal program recipients in a community is less than the percentage change in the level of civilian employment. For example, if civilian employment is reduced by 5 percent in a community, the maximum potential impact on the cost of the three Federal programs examined for that community would be expected to be less than 5 percent. Other supporting data, such as the historical rate of growth of employment and income in a community can provide additional information on the extent to which employment effects associated with base closure will differ among communities.

## Cost of Federal Programs and the Base Realignment and Closure Review Process

**An** economic impact measure used by DoD in prior BRAC rounds is employment change resulting from closure as a percentage of total community employment. Applying this measure, holding other economic factors constant, communities where BRAC closure would affect a large percentage of total area employment are considered to be more impacted than communities where BRAC changes would account for only a small percentage of area jobs. That is, BRAC closures where the potential job change as a percent of economic area employment is high are likely to have a larger effect on local civilian employment levels than where the potential job percentage change is low.

Differences in the potential job change as a percent of economic area employment should, in general, reflect differences in probable costs of need-based Federal programs. The statistical analyses in Appendix B suggest that these changes in civilian employment levels are correlated with changes in costs to need-based programs. Therefore, when considering the economic impact on communities, DoD implicitly considers some costs, albeit unquantified, to other Federal programs.

## CONCLUSIONS

Our statistical analyses indicate that changes in employment *partially* explain changes in the costs of certain Federal programs. This relationship was established at both the national and county levels. However, the results of statistical analyses also demonstrate that other economic factors, particularly in larger communities and at the state level, are more important than employment changes in explaining rising need-based Federal program costs. For example, fund outlays for Medicaid, by far the costliest Federal need-based program, have been rising across the Nation as a result of accelerating per capita costs of medical care.

Our analyses, as evidenced in Appendix B, show that if local employment levels declines by 1,000, the number of AFDC and food stamp program cases rise by 46. The annual cost of these two programs per household is estimated at about \$7,200. This means that the added cost of these programs for each person no longer employed at a base would be about **\$331**, or less than 2 percent of earnings for the typical civilian base employee. When a county gains employment as an increase of a BRAC action, a rise of 1,000 jobs would reduce the demand for AFDC and food stamps by **46** households.

A worst-case estimate of the magnitude of the increased costs for Food Stamps, AFDC, and Medicaid, three programs that account for the majority of all need-based Federal outlays, is provided at Figure 1. The results in Figure 1 are "worst case" because they assume that each direct DoD civilian and military job

**Figure 1.**  
*Estimated 'Worst Case' Cost of Other Federal Programs Compared to BRAC Savings*

<i>Estimated cost of major need-based programs per household</i>	<i>\$12,000</i>
<i>No. of job losses for each need-based program addition (1,000 ÷ 46)</i>	<i>21.7</i>
<i>Program cost associated with each job loss (12,000 ÷ 21.7)</i>	<i>\$553</i>
<i>Number of direct military and civilian jobs lost as a result of BRAC-93</i>	<i>66,427</i>
<i>"Worst Case" cost of BRAC-93 – related job losses (66,427 X \$553)</i>	<i>\$36.7M</i>
<i>Total BRAC-93 annual savings (after implementation)</i>	<i>\$2,144M</i>
<i>"Worst Case" cost as a percentage of annual savings (\$36.7M/\$2,144M)</i>	<i>1.71%</i>

*Notes: Programs include AFDC, Food Assistance (including Food Stamps) and Medicaid. The Federal share of the three programs in FY 93 is estimated at \$125 billion. It is assumed that a household is eligible for all three programs. The number of households receiving assistance is estimated from agency data.*

lost resulted in a decline in employment levels on a one-for-one basis. The analysis of the six counties examined in this study suggest, however, that this assumption greatly overestimates decline in local civilian employment levels. The analysis indicated that civilian employment levels actually rose in five of the six counties examined, despite the base closure. Even under the worst-case assumption that job losses due to base closures reduce county employment levels on a one-for-one basis, however, the costs to other Federal agencies for these programs would total less than 2 percent of base closure-related savings.

## APPENDIX A

# Impact of Base Closures and Realignments on Costs to Non-DoD Federal Agencies

## OVERVIEW

This Appendix discusses the limitations of three alternative quantitative approaches we considered to examine the impact of base closures and realignments on non-DoD government benefits programs. The methodologies are compared for selected major benefits programs on the basis of accuracy and implementation cost in Annex 1 of this Appendix.

Alone, none of the approaches considered could be expected to provide reliable, cost-effective estimates of the linkage between base closure and the cost of need-based programs. Thus, the results support the decision to apply statistical techniques described in Appendix B to estimate the likely relationship among base closures, changes in employment, and the demand for need-based Federal programs.

## BACKGROUND AND APPROACHES FOR ASSESSING THE RELATIONSHIP BETWEEN EMPLOYMENT LEVELS AND FEDERAL PROGRAM COSTS

Base realignments and closures may reduce economic activity in some communities and increase such activity in others. Base closures will, at least temporarily, cause a dislocation of some DoD civilian personnel previously employed at installations. Other off-base civilians and on-base contractors may lose their jobs. In general, military personnel will be reassigned to facilities at other locations.

The first part of this Appendix discusses general program evaluation issues. It also contains a rationale for the methodology that is applied for assessing the relationship between employment levels and the costs of selected need-based Federal programs. The second part, Annex A, focuses on BRAC-related changes in demand for specific government programs, data requirements to estimate impacts, and methodologies that could be used to project the effects of BRAC actions on specific programs. The Annex should be viewed as supporting material for conclusions drawn in the initial sections of this Appendix.

# APPROACHES AND DATA REQUIREMENTS FOR ESTIMATING THE BASE REALIGNMENT AND CLOSURE IMPACT ON NON-DoD GOVERNMENT BENEFITS PROGRAMS

In theory, three approaches could be used for estimating the impact of BRAC actions on non-DoD government benefits program costs. The three methodologies rely on historical data to relate changes in the well-being of households with changes in the use of government services. The sections below specify the general data required to estimate impacts and they describe the three methodologies.

## General Data Required to Estimate the Impact of Base Closures on Non-DoD Government Activities

The data needed to develop estimates of potential base closure impacts summarize the personnel and economic factors that describe military bases. Some of these data are readily available while others are much more difficult to determine. The data required is

- ◆ the number of military personnel expected to remain in an area following base closure (such as early retirees),
- ◆ the number of civilian DoD workers likely to transfer from impacted areas to take other Federal jobs or otherwise leave the area,
- ◆ the number of civilian DoD workers remaining in an area who are likely to find employment without substantially diminished earnings,
- ◆ the number of civilian DoD workers likely to elect early retirement, and
- ◆ military and DoD civilian earnings prior to base closure.

## Using Population Surveys

Using a survey technique would require that we interview people directly affected by base closures. The individuals, selected using statistical sampling procedures, would be asked a series of questions regarding their participation in specified government programs. The impact of base closures on their household earnings, new jobs (if any), and related data would be among the items included in the survey. This information would be tabulated and be the basis for determining factors that would be applied to communities potentially experiencing base closures. For example, if surveys found that in nonmetropolitan counties, " A percent of all civilians found employment within one year following closure

with earnings that are "B" percent below their base earnings and "C" percent at earnings similar to their base earnings, that "D" percent were unemployed, and that the balance moved from the area – those factors would be applied to civilians in nonmetropolitan communities being considered for closing. This approach can provide information on the reliability of the data within specified confidence limits.

## Using National Data

Studies have shown that a substantial percentage of the unemployed population are recipients from programs such as Food Stamps and Medicaid.<sup>1</sup> This relationship exists because unemployed individuals typically have low incomes, qualifying these persons and their households for "transfer payments." Here, the approach is to examine data collected by Federal agencies about outlays from transfer programs and to relate these changes to changes in employment levels. A cross-sectional, time-series analysis of such data at the local or state level provides information on this relationship for the Nation as a whole. These relationships could then be applied to potentially affected populations to estimate expected impacts.

## Examining Changes in Communities with earlier (BRAC-88 or BRAC-91) Base Closures

The third methodology also examines the relationship between changes in population characteristics and changes in the utilization rates for government programs. However, rather than depending on national studies, these relationships and factors are established on the basis of data collected from areas with completed BRAC-88 and BRAC-91 base closures. These relationships are likely to be more representative of communities with potential base closures than those developed from national data. Given sufficient data, statistical tests could be applied to determine the relationship between, for example, the rate of job creation and the rate of change in the number of individuals or households receiving assistance from specific programs, such as Food Stamps.

# LIMITATIONS OF ALTERNATIVE APPROACHES

## Survey Techniques

Among the limitations of the survey approach is the high cost of surveys, particularly if such surveys involve personal interviews. Hundreds of such interviews would have to be completed to obtain a sufficient sample that would provide reliability at the 95 percent confidence level. The second limitation is the uncertainty associated with locating households in areas experiencing BRAC

<sup>1</sup>See for example, "Unemployment Among Welfare Recipients," U.S. Department of Labor, *Monthly Labor Review*, March, 1979.

actions one or more years after a base is closed. **On** the basis of DoD's experience with identifying the location of military households for the purposes of analyzing housing requirements, it would be extremely difficult to determine where military personnel or Federal civilians live.

The survey approach is also limited because only a small number of previous BRAC closures have been completed. Therefore, survey results would be limited to a few areas that may not be representative of all areas with base closures.

## Application of National Data Base Service Demand Studies

We have no assurance that studies based on national or regional data will be applicable to BRAC-related communities. Although a relationship between transfer payments and employment levels exists, our analysis shows that there is a wide variance between locations due to the divergence in economies and other characteristics among jurisdictions. Therefore, quantitative, nationally developed measures of change may not necessarily be representative of communities with military installations that could be closed, and therefore could produce misleading results. For this reason, this approach by itself would not be useful.

## Examining Changes in Communities with earlier (BRAC-88 or BRAC-91) Base Closures

This approach would examine changes in employment, unemployment, and the number of need-based program recipients prior to and following base closure. Assuming that data could be collected, the approach would provide valuable historical data. One concern is that the time required to collect and analyze the data would be considerable. **An** additional constraint, as in the survey approach, is that the sample number of bases fully closed is very small. Finally, given differences among BRAC communities, it would be difficult to project changes in service demand in particular communities with reasonable reliability. Nonetheless, this is the most promising approach because communities experiencing BRAC would form the basis for the relationship between employment reductions and the rise in the demand for need-based programs.

# BRAC-RELATED CHANGES IN THE DEMAND FOR BENEFITS PROGRAMS AND THE RELATIONSHIP TO UNCERTAINTY IN THE COMMUNITY ADJUSTMENT PROCESS

Collectively, there is little doubt that BRAC actions will increase the demand for some government programs since declines in the economy, in part, drive this

demand. However, from a decision standpoint, the issue remains: to what extent is the impact on these programs affected by a decision to close base "A" as opposed to closing base "B"? To tabulate the difference, one would have to project the economic impact and subsequent recovery of a similar action, involving roughly similar numbers of military or civilian personnel, on specific programs, and then identify the difference in the demand for program funds.

A cursory examination of BRAC-88 and BRAC-91 closures completed by December 1993 suggests that no distinct patterns in recovery periods exist. In the majority of cases, communities (at the county level) adjusted quickly, with losses in DoD employment offset by gains elsewhere in the local economy. In other areas, DoD losses have not been offset. Given these differences, one would have to systematically identify key factors that lead to differences in the rate of economic recovery. Unfortunately, these factors include not only quantifiable variables such as measures of the regional economy, but also such factors as community leadership and the ability to attract new activities. **An** equally important concern is that factors relevant to BRAC-88 and BRAC-91 may not necessarily be good predictors of economic and social conditions in the late 1990s, when BRAC-95 actions will actually be implemented. Economic recovery rates in specific communities during the 1990s would, at best, be extremely difficult to predict.

## PROPOSED METHODOLOGY

As shown in Annex 1 to this Appendix, examining non-DoD costs on a base closure-by-base closure basis is impractical because the quality of the data would be inadequate and the cost would be excessive. All the methodologies described have limitations. The most promising and cost-effective methodology is to examine, applying statistical techniques, changes in employment and in the demand for selected Federal programs at the national level and in communities with recent base closures. Although this proposed approach would not provide direct information about the use of Federal programs by former base employees in communities where those workers formed a substantial percentage of total employment, a relationship is implicit.

The proposed methodology has the advantage of making use of DoD's existing methodology and system for estimating employment impacts. Although it does not overcome the problem of a small sample size or of projecting a possible impact several years into the future, it can provide a reasonable scale of the maximum potential effects associated with base closures.

## Specific Government Programs

This Annex briefly describes categories of government programs; highlights general issues concerning the precision, accuracy, and cost of different approaches to estimate the effects of BRAC actions on non-DoD benefits programs; and illustrates how these general issues are relevant for estimating the costs of a few specific programs. The purpose of this Annex is to provide detailed examples that will highlight issues raised in the discussion of the proposed methodology described in Appendix A.

### Categories of Government Benefits Programs

Entitlement benefits programs commit the Federal (and where applicable state) government to funding specified services for all persons meeting the eligibility criteria. This means, for example, that if the Federal government agrees to pay for certain medical services under the Medicaid program, an increase in total demand due to base closures would result in a higher aggregate cost for the program. Therefore, at least in theory, specific base closures could result in higher or lower entitlement program costs.

Spending for discretionary programs such as the Economic Dislocation and Worker Adjustment Assistance Act (EDWAA), is usually set at a specific funding level. Although BRAC-related decisions could affect the distribution of discretionary program funds, it is very unlikely that BRAC actions would have an impact on total spending. In theory, Congress could, in response to a sharp rise or fall in demand, change funding levels. In reality, this is improbable given that alternative BRAC actions would be expected to have only a marginal impact on total demand for most discretionary programs. Therefore, only entitlement programs could reasonably be expected to have a measurable effect on total outlays, subject to the limitations discussed later in **this** report.

Several Federal programs, particularly entitlement programs, are joint Federal-state activities, including Medicaid and unemployment compensation. Therefore, a change in demand for such programs has an impact on both Federal and state funding.

Although they are not addressed directly in this Annex, state and local government finances can be affected by BRAC-related actions. School districts can also be directly affected by base closures because "school impact" assistance would eventually be withdrawn when DoD-dependent students leave the school system. Local and state governments also face reduced revenue from most tax sources if earnings of residents are reduced. To the extent that households leave

an area following base closure, the demand and outlays for some services also declines.

## Precision, Accuracy, and Cost of Approaches that Could be used to Estimate the Impact on Non-DoD Benefits Programs

As noted earlier in this Appendix, the reliability of cost estimates using various methodologies can vary. For the purposes of this Annex, each methodology will be assigned one of the following three scaled confidence levels for each identified program:

- ◆ *High confidence* means that program costs can be estimated with accuracy.
- ◆ *Medium confidence* means that program costs can be estimated with some uncertainty.
- ◆ *Low confidence* means that program costs can only be estimated with substantial uncertainty.

Frequently, in order to obtain increased confidence in cost estimates, more expense is required. The cost of estimating program impacts will also be given one of the following three cost measures for each identified program:

- ◆ *Low cost* means that the cost of analysis is within reasonable limits of the current BRAC process.
- ◆ *Medium cost* means that the cost of analysis exceeds that expected for the current BRAC process.
- ◆ *High cost* means that the cost of analysis is well outside that expected for the current BRAC process.

## Selected Benefits Programs

This section briefly describes selected major Federal programs that might be affected by base closures.

In some instances, two potential base closures could have a different impact on the use of certain government programs. For example, a base closure in an area with few private sector employment opportunities would be more likely to reduce the income of some households to below the poverty level, and therefore make them eligible for Federal benefits programs, compared to an area where the economy is expanding.

## MEDICAID

### *Program Description*

Medicaid is a medical assistance program jointly funded by states and the Federal government. Medicaid covers health care expenses for all recipients of Aid to Families with Dependent Children (AFDC). At the option of the state, other low income individuals also qualify. The cost of Medicaid in FY92 was \$59.9 billion.<sup>1</sup>

### *Likely Impact of Base Closure*

Under certain conditions, the demand for Medicaid could rise from claims made by two groups:

- ◆ former DoD civilian workers who remain in the state following base closure and who cannot find work for an extended time period (if their household income falls below a threshold level, they could be eligible for Medicaid); and
- ◆ non-DoD worker households that have sharply reduced earnings (these households include workers who lost higher paying jobs as an indirect result of base closure).

### *Unit of Measure and Approach*

The appropriate unit of measure is a household.<sup>2</sup>

The approach would be to first determine the number of households that are expected to be *potentially* eligible. The second step would be to determine, on the basis of such factors as the local unemployment rate, the likelihood that the workers could not find another job paying above the minimum wage. The third step would be to estimate the number of workers who lost their jobs and would leave the area. These estimates, in turn, would be the basis for a crude projection of the level of added demand for Medicaid.

Demand can be expressed as

(number of households with members who lost jobs) x (percent of households expected to have income fall to the program eligibility level) x (percent eligible who will use the program) x (cost per household to the Federal government)

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<sup>1</sup> Because Medicaid is a joint Federal-state program, higher demand for Medicaid results in increased state expenditures.

<sup>2</sup> A household consists of a single individual or a family.

*Potential Methodologies that can be used to Derive Estimates*

- ◆ surveys of recipients in areas with closed DoD installations (methodology 1);
- ◆ change in demand for Medicaid following base closures, holding other factors (such as local economy) constant based on review of relevant data from communities with base closures completed (methodology 2); and
- ◆ national or regional data showing the relationship between the change in earnings or unemployment and the change in the number of Medicaid applicants (methodology 3).

*Necessary Assumptions to Make*

Assumptions involve

- ◆ the percentage of households expected to have income fall below the eligibility level, and
- ◆ the percentage of eligibles who will use the program.

*Accuracy of Results*

Depending on the methodology selected, the anticipated accuracy varies from low to medium:

- ◆ using methodology 1 – medium confidence,
- ◆ using methodology 2 – medium confidence, and
- ◆ using methodology 3 – low confidence.

*Cost of Analysis*

The cost of implementing the analysis ranges from low to high:

- ◆ using methodology 1 – high cost,
- ◆ using methodology 2 – medium cost, and
- ◆ using methodology 3 – low cost.

## FOOD STAMPS AND OTHER FOOD AND NUTRITION ASSISTANCE

### *Program Description*

The Food Stamp program, run by the U.S. Department of Agriculture, provides food coupons through state **and** local welfare agencies. The aim of this and related programs is to increase the purchasing power of needy persons. The Federal government considers food stamps to be an unemployment-sensitive program. That is, one can predict the demand for food stamps by projecting unemployment rates. The food and nutrition programs received \$27.1 billion in Federal funds in FY92.

### *Unit of Measure and Approach*

Because need-based benefits programs are typically based on household income, the best unit of measure is the number of households.

Projecting the added cost to this program caused by base closure would require estimating the change in unemployment resulting from base closure. This, in turn, would be dependent on the condition of the local economy and its ability to absorb workers who lost their jobs as a result of base closure. The increased cost of the program would depend on factors such as household size.

Demand can be expressed as

(number of households with members who lost jobs) x (percent of household expected to have income fall to the food stamp eligibility level) x (percentage of eligible households that will use the program) x (cost per household to the Federal government)

### *Potential Methodologies to Derive Estimates*

- ◆ surveys of food stamp recipients in areas with closed installations (methodology 1);
- ◆ change in demand for food stamps in communities following base closures, holding other factors (such as local economy) constant (methodology 2); and
- ◆ national or regional data showing the relationships between the change in earnings (or unemployment) and the change in food stamp program application; this assumes that the relationship between unemployment and food stamp demand at the national level holds at the local level (methodology 3).

### *Accuracy of Results*

The expected accuracy of the results ranges from low to medium:

- ◆ using methodology 1 – medium confidence,
- ◆ using methodology 2 – medium confidence, and
- ◆ using methodology 3 – low confidence.

### *Cost of Analysis*

Depending on the methodology selected, the anticipated implementation cost can be low, moderate, or high:

- ◆ using methodology 1 – high cost,
- ◆ using methodology 2 – medium cost, and
- ◆ using methodology 3 – low cost.

### OTHER NEED-BASED PROGRAMS

In addition to Medicaid and Food Assistance programs (including Food Stamps), there are two other large Federal need-based programs: AFDC (Aid to Families with Dependent Children) and SSI (Supplemental Security Income). The demand for AFDC is related to both economic and behavioral variables. One cannot fully explain the growth of the AFDC program simply by analyzing economic conditions. Although it would be extremely difficult to link the demand for AFDC to base closures, this program has been included (with Medicaid and Food Stamps) as one that could be linked to employment (see Appendix B). The SSI program, however, was excluded from this group because virtually all persons qualifying for this program are either blind, disabled, or elderly. Therefore, no association could be established between employment levels and the SSI program.

Aid to Families with Dependent Children, Medicare, SSI, and Food Stamps account for the majority of all Federal outlays for cash and non-cash benefits aimed at persons with limited income. Other categories of assistance include medical aid for needy veterans, housing programs, education aid (such as the Head Start program and college loans) and job training for disadvantaged persons. None of these programs can be linked directly (or, in most instances, indirectly) to BRAC actions.

Participation rates in many need-based programs vary because of differences in state standards, regulations, enforcement, and other factors. Unless a base closure results in a permanent change in the characteristics of the non-DoD

population either as a result of migration or permanent income losses, a direct linkage to changes in demand for these programs would be extremely difficult, if not impossible, to quantify.

These comments are not intended to suggest that base closures, particularly in areas where a military installation comprises a significant share of the local economy, will not have long-term effects. In some communities, there may be social and economic repercussions that could affect numerous Federal (and state) programs. But to quantify those effects and to quantify the *net* impact of those effects on Federal outlays would be a monumental task that would yield highly uncertain estimates.

## SUMMARY

The preceding pages considered the precision, accuracy, and cost of the BRAC-related actions for a few specific Federal programs. These specific programs were included in this Annex because they form the basis of the statistical analyses presented in this report. Although the results are not reported in detail here, we considered other Federal, state, and local programs under a similar framework. We found that, in general, estimating the costs for those programs entails the same trade-offs among precision, accuracy, and cost of estimation as those demonstrated in the specific Federal programs analyzed above.

## APPENDIX B

# Demand for Federal Transfer Payments – an Econometric Analysis

## INTRODUCTION

This Appendix presents the econometric underpinnings to quantitatively explain changes in Federal non-pension transfer payments at the county level. Of particular interest is the effect of employment changes on transfer payments, although other variables are introduced as necessary to ensure sound model specifications. These econometric analyses produced statistically significant transfer payment-employment (or transfer payment-unemployment) relationships using the econometric technique of pooled cross-section, time-series analysis. This Appendix addresses the main transfer payment-employment results.

Two different data bases were used for establishing these transfer payment-employment relationships. The first data base was Federal annual (1988 through 1992) transfer payment data for Food Stamps, Aid to Families with Dependent Children (AFDC), other programs, and Medicaid (but excluding pensions) for 3,000 counties from the *Consolidated Federal Funds Report*, Bureau of the Census. The Census transfer payment data are expressed in current dollars, which were adjusted for inflation to derive real transfer payments. The second data base was unpublished monthly (or quarterly) data, from the 1988 through 1993 period, from five counties – Champaign, Ill.; Iosco, Mich.; Monterey, Calif.; Sacramento, Calif.; and Rockingham, N.H. These unpublished transfer payment data reflect Food Stamp and AFDC payments, and they are expressed in terms of the number of "cases" (i.e., recipient beneficiaries). This second set of data excluded Mississippi County, Ark. because of incomplete data.

Two major statistical conditions need to be satisfied for obtaining sound statistical results. First, problems of positive autocorrelation in the time series residuals of regression equations can lead to underestimation of equation errors and overestimation of the significance of model parameters, unless corrected. Positive autocorrelation means that the residuals of the equation are positively related to one another over time, instead of being uncorrelated with one another – an assumption that ordinary least squares requires for obtaining sound results. According to the test statistic for uncovering positive autocorrelation, the Durbin-Watson statistic, there was very high positive autocorrelation in the regression residuals. This problem was corrected by expressing the transfer payment data and its explanatory factors in difference form, which is the appropriate correction procedure in this case. Second, heteroscedasticity in the cross-section variances can lead to biased model coefficients. Heteroscedasticity refers to the variances varying from one cross-section unit to another, instead of being

relatively constant – another assumption that ordinary least squares requires for obtaining sound results. No evidence of heteroscedasticity was found in the cross-section variances of the regression equations.

## CENSUS DATA RESULTS

Equation B-1 demonstrates that changes in county-level transfer payments,  $[(\Delta\text{tran}(i))]$ , are affected by changes in county employment,  $[(\Delta\text{emp}(i))]$  across more than 3000 counties ( $i=\text{counties}$ ). Differences in county size, as measured by base year labor force levels,  $[(\text{lbf}(t-1))]$ , are also important. Neither state dummy variables nor metropolitan/nonmetropolitan county dummy variables controlled for differences in county size were as significant as the lagged labor force variable; interaction effects between the location dummy variables and the employment/ labor force variables were not found.

$$\Delta\text{tran}(i) = -1,086,270 - 11/6 \text{B} * \Delta\text{emp}(i) + 2,026 * \text{lbf}(t-1) \quad [\text{Eq. B-1}]$$

(-5.1)      (-18.6)                      (+130)

Number of observations = 12,528

$R^2$  (adjusted for degrees of freedom) = 0.58

Equation B-1 indicates that all nonpension transfer payments collectively tend to increase by about \$2,000 for each employee in the labor force but decrease by more than \$11,000 for each individual added to the employment rolls (holding labor force constant). Thus, the net effect of the labor force and employment change variables on transfer payments is (\$9,000). According to Equation B-1, a particular county's total transfer payments would change in relation to its total labor force level and total change in employment.

Both the labor force and employment variables are statistically significant at the 99 percent confidence level of the t-distribution. Moreover, there is little intercorrelation between the labor force and employment variables ( $R^2$  is less than 0.01), which adds to the precision in Equation B-1 coefficients. As indicated in the introduction, positive autocorrelation is present and corrected for by expressing county transfer payments in difference form; no evidence of heteroscedasticity in cross-section variances is found. The  $R^2$  of 0.58 is considered good for a data base with more than 12,000 cross-section and time-series observations.

## UNPUBLISHED COUNTY RESULTS

Equation B-2 also demonstrates that there are statistically significant employment-change effects on changes in the number of AFDC and Food Stamp cases in five selected counties. County dummy variables were also significant and control for nonemployment influences on transfer payments. Interaction

effects between state dummy variables and the employment variable were tested for and not found. The variables are defined in the same way as they were for Equation B-1.

$$\Delta \text{tran}(i) = 196.66 * \text{Champaign} + 3.15 * \text{Iosco} + 688.14 * \text{Monterey} + 39.93 * \text{Rockingham} + 1678.53 * \text{Sacramento} - 0.046 \text{dEMP}(i) \quad [\text{Eq. B-2}]$$

(-10.99)

Number of observations=197

R<sup>2</sup>=0.79

F statistic for county = dummy effect is significant at the 1 percent point of the F-distribution

Equation B-2 indicates that Food Stamp and AFDC program cases in these counties decrease by 4.6 cases for every 100 individuals added to the employment rolls, holding labor force constant. However, the county dummy variables indicate that other factors are present. For example, Sacramento tends to have an increase of 1,678 cases beyond the effects of employment changes, while Iosco – a much smaller county – has very little nonemployment influences on its transfer payments. More generally, these results show that transfer payment-employment effects are stronger for smaller counties than for larger counties, perhaps because cyclical and other employment changes tend to have greater relative effects on smaller counties than on larger counties.

Both the employment and county dummy variables are highly statistically significant. The employment variable is significant at the 99 percent confidence level of the t-distribution, while the county effect is significant at the 1 percent point of the F-distribution. Again, positive autocorrelation was corrected for by expressing county transfer payment cases in difference form, and no heteroscedasticity in cross-section variances was found. The R<sup>2</sup> of 0.79 is considered very good for a data base with 197 cross-section and time-series observations.

The way in which Food Stamp and AFDC program cases are affected by unemployment has also been addressed. Equation B-3 indicates that these transfer programs increase by 5.3 cases for every 100 individuals who become unemployed, holding the size of the labor force constant. However, as in the case of the employment effect, Sacramento tends to have a relatively large increase of cases (1,498) beyond the effects of unemployment changes. The other counties have considerably smaller extra-unemployment effects. Finally, the statistical properties of the transfer-unemployment formulation also are quite good: R<sup>2</sup> is 0.70; the unemployment variable is statistically significant at the 99 percent confidence limit of the t-distribution; and the county effect is significant at the 1 percent distribution of the F-distribution.

The transfer-unemployment formulation is as follows:

$$\Delta \text{trans}(i) = 1498 * \text{Sacramento} + 3.23 * \text{Iosco} + 617 * \text{Monterey} + 38.32 * \text{Rockingham} + 0.053 * \Delta \text{unemp} \quad [\text{Eq. B-3}]$$

(4.92)

Number of observations = 191

$R^2 = 0.70$

F statistic for county = dummy effect is significant at the 1 percent point of the F-distribution

## CONCLUSIONS

These econometric results indicate that changes in nonpension transfer payments are related to changes in employment (and unemployment). Employment decreases tend to raise transfer payments, while employment increases tend to lower transfer payments. However, these results also show that changes in transfer payments are relatively more important for smaller counties than they are for larger counties.

This econometric evidence is strong for the following reasons: First, the employment-transfer payment result is the same regardless of how broad or narrow is the definition of nonpension transfer payments used. Second, the evidence is the same regardless of whether the transfer payment variable is expressed in dollar or in case number terms. Third, the result is the same regardless of the number of counties included in the analysis.

Appendix C

GAO Letter



United States  
General Accounting Office  
Washington, D.C. 20548

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National Security and  
International Affairs Division

The Honorable Robert E. Bayer  
Deputy Assistant Secretary of Defense  
Economic Reinvestment and BRAC

Dear Mr. Bayer:

In discussions with your staff we were asked for clarification of our position on inclusion of government-wide costs in DOD's Base Closure Analysis.

The decision to close and realign military bases is based on many factors, including the costs and savings associated with different options. Identifying the relevant costs and savings has been a challenge to DOD and the Base Closure Commission, and the estimating process has been improved with successive rounds of the base closure process.

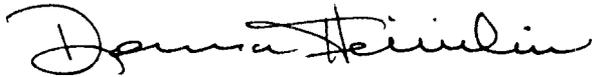
Given that the closing and realigning military bases can involve costs to the government (and possibly savings) that do not accrue directly to DOD, there is an issue of how those costs or savings should be factored into DOD's recommendations regarding which bases to close, and the final decisions made. For example, when a military hospital is closed, DOD can realize savings, but those may be offset government-wide as military retirees from the affected region enroll in Medicare. Similarly, if the National Park Service acquires a closed base, it will incur costs to operate it as a public facility. Moreover, there could be costs to the federal government if usage of federal entitlement or welfare programs increases in communities negatively impacted by the loss of a base, or conversely, there could be savings for communities whose bases are expanded. Quantification of many of these costs is difficult if not impossible, and is speculative. Other costs are quantifiable and are subject to reasonable estimation.

**As** we have recommended in the past, we believe substantial and quantifiable government-wide cost and savings should be included in the COBRA cost analysis. In areas where DOD savings could result in significant and quantifiable costs to other agencies, such as in the case of Campus costs transferring to Medicare, or continuing **GSA** lease costs, DOD should indicate that fact to the Commission and

those costs to other Federal agencies. In possible cases of substantial, shifting of costs from one Federal agency to another, being unaware of such shifts hinders the Base Closure Commissions overall evaluation of the DOD process and related recommendations.

If you have any questions, please call Bob Meyer, (202) 512-8431, or myself, (202) 512-8412.

Sincerely yours,



Donna M. Heivilin, Director  
Defense Management and NASA Issues